Examining Pharmacy Students' Stress Level during First Academic Year

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ABSTRACT

Most of the studies' findings explored that the prevalence of stress is increasing among university students. Student retention, student progression and graduate on time (GOT) are becoming critical issues in all universities. There are a significant number of studies that have examined the stress level of students using the Perceived Stress Scale (PSS). PSS is the most widely used psychological instruments for measuring the perception of stress. This study sought to identify the stress level among first year pharmacy students of faculty of pharmacy, and then might to compare perceived stress scale between male and female students by using this PSS score measurement. A cross-section descriptive study was done at Faculty of Pharmacy, International Islamic University Malaysia (IIUM). Ninety-eight first year pharmacy students were chosen by a convenience sampling method and then measured their stress level during their first academic year using perceived stress score (PSS). Data was analyzed by SPSS version 12.0 and ethical approval was taken from Kulliyyah (Faculty) of Pharmacy research committee (KPRC), the IIUM Research and ethics community (IREC), Student's Affairs office of Kulliyyah (Faculty) of Pharmacy and first year pharmacy students from Kulliyyah (Faculty) of Pharmacy. The study findings showed that most of the students were female, 74.5% and mostly they had experienced in staying at the hostel during their school life. Most participants came from middle class family. This study found that female students' PSS score was higher than male students' PSS scores (T-test of PSS Score in Female Students (mean (SD) of PSS score 27.44 $\pm$5.19 while T- test of PSS Score in Male Students (mean (SD) PSS score 24.26 $\pm$ 6.53). These findings provide a better understanding that the stress level and contributing factors experienced by first-year pharmacy students. Finally, it is recommended that there is needed to search the relevant ways to help them in their studies and future career.

Keywords: Stress Level, Perceived Stress Scale, Pharmacy Students, Contributing Factors.

INTRODUCTION

Stress is a condition where body needs to response to external change with adjustment in physical and emotional state. When people are achieving adult age, they tend to suffer from various kinds of stress. Recent studies have provided many possible stressors that lead people to become distressed and consequently affect the quality of life. It is found that teenagers may experience stress in situations between making decisions which is to follow rules and orders or to be free and discover the world like they should [1]. For pharmacy students, sitting for examinations, assignments and other commitments are sometimes very stressful. In a study, it is found that the three most reported stress induced factors are related to academic activities. For example,

examinations or tests, Monday morning examinations and out-side-of-class assignments were ruled out to be among stressful events for students [2]. However, the individual responses to any stressors could be varied based on their personality, perceptions and experiences [3]. The positive attitudes may lead towards individual ability to control the stressful conditions from affecting daily life [4]. On the other hand, if a person is unable to control stressful events, they may suffer from it either emotionally or physically which consequently trigger chronic illnesses in his or her later age [5].

MATERIALS AND METHODS

A cross-sectional descriptive study was conducted on ninety-eight first-year students in Faculty of Pharmacy, International Islamic University Malaysia (IIUM), at Kuantan Campus. The participants were chosen by convenience sampling method and Perceived Stress Scale (PSS) scores were used as a research tool to measure participants' stress level. Four main parts of questionnaires were involved in (PSS) score. Part one is about the general information on respondent's background such as family's socio-economic status, numbers of siblings and experience in boarding school. Part Two is regarding on students feeling and thought in their real lives to explore the perceived stress level that the participant might have. Part Three is about their perception on daily routines as pharmacy students. Part Four is a set of questionnaires to identify their efforts in managing and reducing their stress. Types of scale used for all three parts of main questionnaires except part one was a five-type Likert Scale which consisted of a 0 to 4 rating scale. The scale is as follows: 0 = never, 1 = almost never, 2 = sometimes, 3 = often and 4 = very often. On the other hand, the assessment of the four positive items was done based on PSS which are obtained by reversing the scores. For example, 0 = 4, 1

= 3, 2 = 2, etc., and then summing across all 14 items. The four positively stated items are item 4, 5, 7 and 12. From 14 questions, the range of score is from 0 to 56. The higher scores indicate that the students had greater perceived stress. Data was analysed by (SPSS) Version 12.0 with descriptive statistics such as frequencies, means, standard deviations and percentages. Concerning the ethical approval, this research was approved from Kulliyyah (Faculty) of the Pharmacy Research committee (KPRC), the IIUM Research & Ethics Community (IREC), Student Affair office of (Faculty) of the Pharmacy and first year nursing students in Kulliyyah (Faculty) of Pharmacy, IIUM.

RESULTS

Out of ninety-eight respondents, 39.8% are male and 60.2% are female. 74.5% of them have experienced boarding school while the rest 25.5% did not have any experience staying in hostel during school life. For financial background, majority of the respondents, 95.9% were from middle class family. Only 2% from poor family and other 2% from wealthy family. It shown in table 1.

Every individual's PSS for the second part of questionnaire is calculated by summing up all the score from each question including the reversed ones. For male respondents, the mean (SD) of PSS score is 24.26 $\pm$ 6.53 (n=39). For female respondents, their mean (SD) of PSS score is 27.44 $\pm$ 5.19 (n=59). From the data analysis, it is found that female students' PSS score was statistically higher than of that of male students.

From Table 2, the t value obtained is 23.204 with degree of freedom 38 (p = 0.000). It is 95% confident that the true value lies between score 22.14 to 26.38.

From Table 3, the t value obtained in samples of female students is 40.609 with

degree of freedom 58 (p = 0.000). It is 95% confident that the true value lies between score 26.09 to 28.79. The results indicate that there is a statistically significant difference between the mean PSS scores for males and females. In term of mean score for PSS, females are significantly higher (27.44) in comparison to male (24.26).

From Table 4, the t value obtained in samples of female students is 43.636 with degree of freedom 97 (p = 0.000). It is 95% confident that the true value lies between score 24.98 to 27.36.

A paired sample t test was also done to compare the means of PSS scores between male and female students and to obtain the correlation. From the analysis, it is found that r = 0.023 and p = 0.074 (p > 0.05). Thus, the difference is low (sig. = 0.888) as p value is more than 0.05. The correlation was found to be very low (Table 5).

Specific data analysis for frequencies in the response for every single question was also obtained. The response for each question in second part of the questionnaire (PSS) is classified into five categories − never, almost never, sometimes, fairly often and very often (Table 6).

Table 1. Socio-Demographic Characteristics of First-Year Pharmacy Students

Taking Part in a Survey to Assess their Perceived Stress and Quality of Life (n = 98)

Variable	No. (Percentage)
Gender	
Male	39 (39.8%)
Female	59 (60.2%)
Financial background	
Poor	2 (2.0%)
Moderate	94 (95.9%)
Wealthy	2 (2.0%)
Experience in boarding school	
Yes	73 (74.5%)
No	25 (25.5%)
Siblings	
1	1 (1.0%)
2	3 (3.1%)
3	14 (14.4%)
4	15 (15.5%)
5	19 (19.6%)
6	16 (16.5%)
7	11 (11.2%)
8	7 (7.1%)
9	6 (6.1%)
10	3 (3.1%)
11	2 (2.0%)
12	1 (1.0%)

Table 2. T- Test of PSS Score in Male Students (Mean (SD) PSS Score 24.26 $\pm$ 6.53)

			Test Value = 0			
	t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**95% Confidence Interval of the Difference**	
					Lower	**Upper**
PSS1	23.204	38	0.000	24.25641	22.1402	26.3726

Table 3. T-Test of PSS Score in Female Students (Mean (SD) of PSS score 27.44 $\pm$5.19)

			Test Value = 0			
	t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**95% Confidence Interval of the Difference**	
					Lower	**Upper**
PSS1	40.609	58	.000	27.44068	26.0880	28.7933

Table 4. T-test of PSS Score in All Subjects (Mean (SD) PSS Score 26.17$\pm$5.94)

			Test Value = 0			
	t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**95% Confidence Interval of the Difference**	
					Lower	Upper
PSS1	43.636	97	0.000	26.17347	24.9830	27.3639

Table 5. Comparison of Mean (SD) 95% Confidence Interval, Minimum and Maximum Value of Male, Female and Both Genders

	Mean $\pm$SD	**95% Confidence Interval**		**Minimum Value**	**Maximum Value**
		Lower	Upper		
Male	24.26 $\pm$ 6.53	22.14	26.38	14.00	37.00
Female	27.44 $\pm$5.19	26.09	28.79	17.00	43.00
Total	26.17$\pm$5.94	24.98	27.36	14.00	43.00

Table 6. Pharmacy Students' Responses to the Perceived Stress Scale (n = 98)

Statement	Never No. (%)	Almost Never No. (%)	Some Times No. (%)	Fairly Often No. (%)	Very Often No. (%)	Overall Response, Mean (SD)
In the last month, how often have you been upset because of something that happened	2 (2.0)	6 (6.1)	64 (65.3)	23 (23.5)	3 (3.1)	2.19 (0.684)

unexpectedly?						
In the last month, how often have you felt that you were unable to control the important things in your life?	1 (1.0)	14 (14.3)	51 (52.0)	28 (28.6)	4 (4.1)	2.20 (0.773)
In the last month, how often have you felt nervous and "stressed"?	0 (0.0)	4 (4.1)	52 (53.1)	39 (39.8)	4 (4.1)	2.42 (0.625)
In the last month, how often have you felt confident about your ability to handle your personal problems?	0 (0.0)	4 (4.1)	34 (34.7)	47 (48.0)	13 (13.3)	2.70 (0.749)
In the last month, how often have you felt that things were going your way?	0 (0.0)	2 (2.0)	44 (44.9)	47 (48.0)	5 (5.1)	2.56 (0.627)
In the last month, how often have you found that you could not cope with all the things that you had to do?	1 (1.0)	18 (18.4)	50 (51.0)	27 (27.6)	2 (2.0)	2.11 (0.758)
In the last month, how often have you been able to control irritations in your life?	0 (0.0)	3 (3.1)	37 (37.8)	48 (49.0)	10 (10.2)	2.66 (0.703)
In the last month, how often have you felt that people around you always give some burdens and disturb your daily routines?	4 (4.1)	35 (35.7)	46 (46.9)	11 (11.2)	2 (2.0)	1.71 (0.799)
In the last month, how often have you been angry because of things that were outside of your control?	2 (2.0)	23 (23.5)	49 (50.0)	20 (20.40)	4 (4.1)	2.01 (0.831)
In the last month, how often have you felt	3 (3.1)	21 (21.4)	57 (58.2)	11 (11.2)	6 (6.1)	1.96 (0.836)

difficulties were piling up so high that you could not overcome them?						
You became angry and leave whenever a person makes you wait for too long.	4 (4.1)	40 (40.8)	28 (28.6)	20 (20.4)	6 (6.1)	1.84 (1.002)
You always have the time you need to do work without interruption.	2 (2.0)	14 (14.3)	43 (43.9)	28 (28.6)	11 (11.2)	2.33 (0.928)
You easily become frustrated when handling excessive workload or tasks.	1(1.0)	19 (19.4)	51 (52.0)	19 (19.4)	8 (8.2)	2.14 (0.862)
You responded angrily whenever you are asked to do something unplanned.	5 (5.1)	30 (30.6)	41 (41.8)	16 (16.3)	6 (6.1)	1.88 (0.960)

Table 7. Students' Responses to the Life as a Pharmacy Student (n=98)

Statement	Never No. (%)	Almost Never No. (%)	Some Times No. (%)	Fairly Often No. (%)	Very Often No. (%)	Overall Response, Mean (SD)
You find lectures in Kulliyyah of Pharmacy are a bit boring and quite hard to understand and memorize.	1 (21.0)	12 (12.2)	63 (65.3)	17 (17.3)	5 (5.1)	2.13 (0.731)
You find your current timetable is so packed and burdening.	0 (0.0)	3 (3.1)	24 (24.5)	37 (37.8)	34 (34.7)	3.04 (0.853)
You find lecturers are less considerate with strict marking and push you up to score in exams.	4 (4.1)	22 (22.4)	44 (53.1)	17 (17.3)	11 (11.2)	2.09 (1.011)
You feel that pharmacy course is not what you are supposed to take.	25 (25.5)	37 (37.8)	24 (24.5)	8 (8.2)	3 (3.1)	1.25 (1.031)
You feel that your class is uncomfortable and less conducive.	10 (10.2)	25 (25.5)	35 (35.7)	15 (15.3)	13 (13.3)	2.56 (1.185)

Table 8. Pharmacy Students' Responses on the Management Steps to Overcome Stress (n = 98)

| Statement	Never No. (%)	Almost Never No. (%)	Some Times No. (%)	Fairly Often No. (%)	Very Often No. (%)	Overall Response, Mean (SD)
You tend to have some sleep to get rid of stress and reduce anxiety.	2 (2.0)	6 (6.1)	21 (21.4)	50 (51.0)	19 (19.4)	2.79 (0.901)
You find a good friend to tell anything that makes you become stressful.	1 (1.0)	10 (10.2)	37 (37.8)	33 (37.8)	17 (17.3)	2.56 (0.938)
You gain more appetite whenever you get distressed and tend to find foods to entertain yourself.	6 (6.1)	10 (10.2)	43 (43.9)	25 (25.5)	14 (14.3)	2.32 (1.046)
You practice a good breathing technique that can lower your respiratory rate and blood pressure whenever you become stressful and anxious.	7 (7.1)	29 (29.6)	36 (36.7)	20 (20.4)	6 (6.1)	1.89 (1.019)
You plan to do outdoor activities such as cycling, jogging or playing futsal to relieve stressful conditions.	1 (1.0)	15 (15.3)	34 (34.7)	30 (30.6)	18 (18.4)	2.51 (1.001)
You are likely to go to peaceful areas such as beach, waterfalls or village to relax your mind when having stress.	2 (2.0)	11 (11.2)	36 (36.7)	24 (24.5)	25 (25.5)	2.61 (1.056)
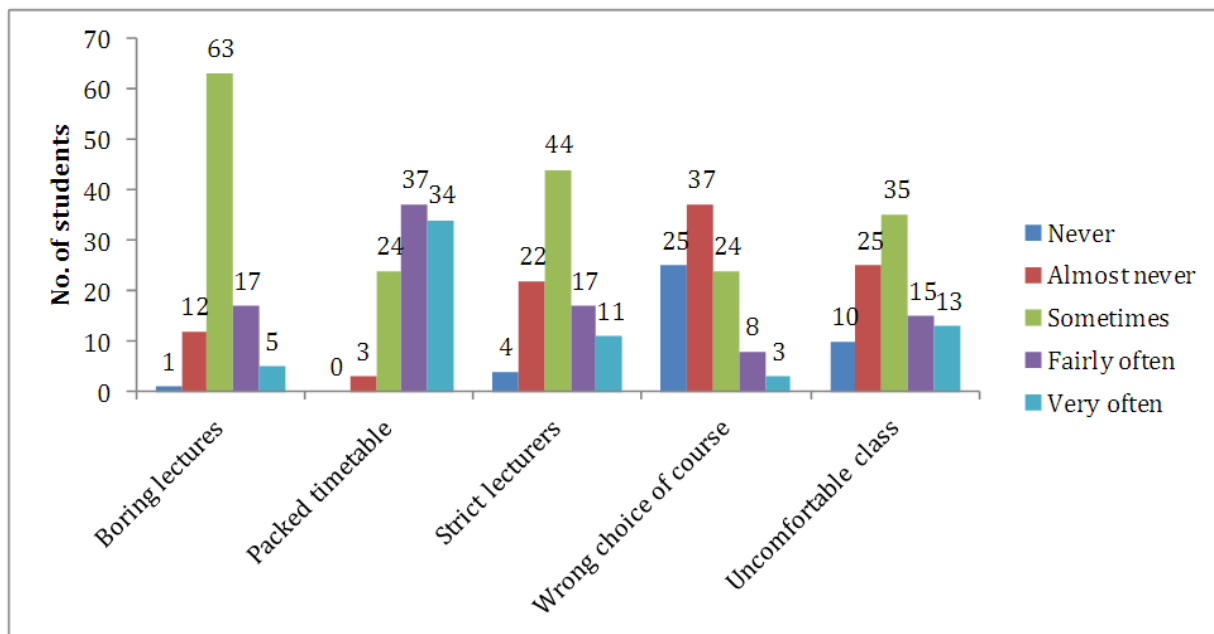
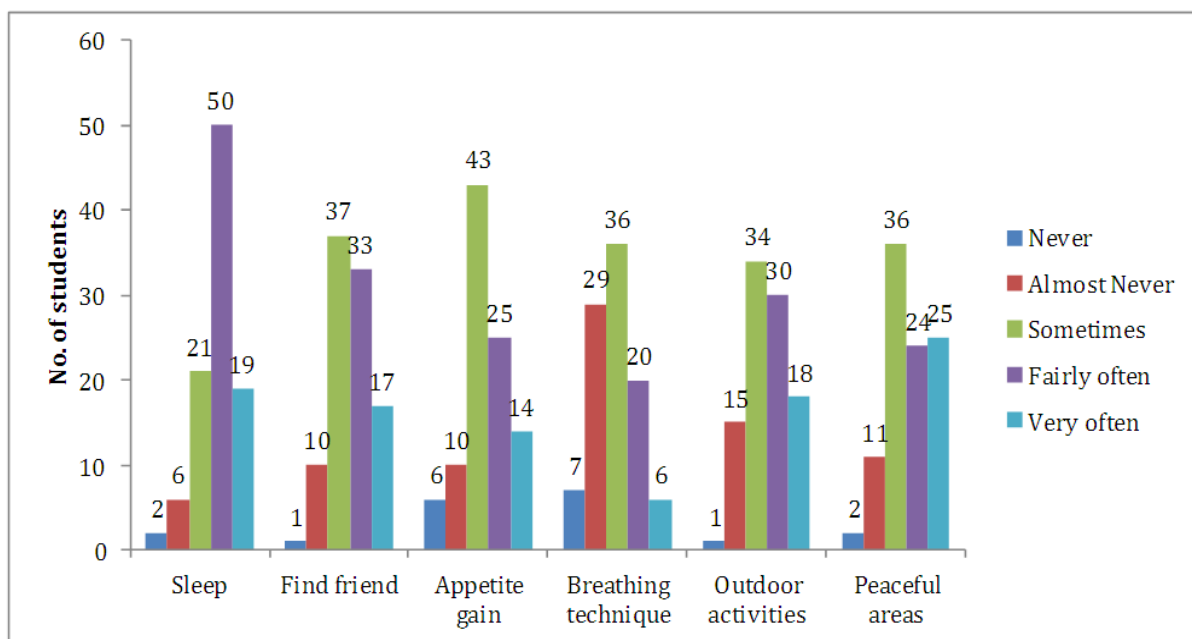*Fig.1. Responses on a Life as a Pharmacy Student*

Fig.2. Self-Management of Stress among Pharmacy Students

Table 9. Number of Students and their Percentage by Physiological Parameters Classification

Parameters	Range	PSS Score (mean 26.17 ± 5.94)	
		n (%) (20.23 < PSS < 26.17) (n=35)	n (%) (26.17 < PSS < 32.11) (n=33)
BP (Systolic)	>140 mmHg	1 (2.86)	3 (9.09)
	120 – 140 mmHg	10 (28.57)	12 (36.36)
	< 120 mmHg	24 (68.57)	18 (54.55)

BP (Diastolic)	>90 mmHg	-	1 (3.03)
	80 – 90 mmHg	3 (8.57)	2 (6.06)
	< 80 mmHg	30 (85.71)	30 (90.91)
Fat Percentage	> 17% (men) > 27% (women)	8 (22.86)	13 (39.39)
	13 – 17% (men) 20 – 27% (women)	22 (62.86)	17 (51.52)
	< 13% (men) < 20% (women)	5 (14.29)	3 (9.09)
Body Mass Index (BMI)	≥ 23	9 (25.71)	14 (42.42)
	18.5 – 22.9	22 (62.86)	15 (45.45)
	≤ 18.4	4 (11.43)	4 (12.12)
Waist Circumference	> 90 cm (men) > 80 cm (women)	2 (5.71)	7 (21.21)
	≤ 90 cm (men) ≤ 80 cm (women)	33 (94.29)	26 (78.79)

DISCUSSION

According to the study of Cohen, Kamarck and Mermelstein (1983) [4], the PSS's means for male student samples to the two sets of students in the study are 24.26 ± 6.53, 22.38 and 21.73 respectively while the PSS's means for female students are 27.44 ± 5.19, 23.57 and 25.71. In addition, another study done by Marshall et al. (2008) [2] which also did PSS score shows that mean of male subset was 22.40 ± 7.7 while PSS's mean for female subset was 28.10 ± 7.7. This indicates that girls have probably higher intensity of stress level in their daily lives. Many stressors such as hormones and genetic predisposition could influence towards a difference in stress level between male and female students.

The Study findings showed that students could handle their psychological stress that they gained from daily routines such as finishing homework and assignments, managing students' societies and activities, sitting for examinations, and conducting group works and discussion. Based on the statement given through PSS, majority of the responses are 'sometimes' which denote that it does not happen so often in their real lives. Although they had been facing many problems and stressful conditions, their attitudes and discipline manage to control the circumstances.

Besides, regarding their lives as pharmacy students, the class sessions were not enjoyable at all. They agreed that sometimes they must go through some difficulties in striving for academic purpose such as in listening to dull lectures that did not attract their attention and enthusiasm. For a certain time, they felt so burdened with their class timetable which is quite packed from early morning until late evening. Besides, they also experienced with poor facilities in their class which may contribute to some distractions in giving full attention during lectures. However, all the obstacles did not let them become regretful on their preference to learn pharmacy course. This is portrayed by the response which is majority of them are almost never (37.8%) or never (25.5 %) think that their choice to become a pharmacist in the future is a wrong decision. Apart from that, majority of them (43.9%) felt that sometimes lecturers are not lenient in marking examination papers which dragged them to score less marks.

As stress may lead to chronic serious diseases in later age of life, the management is very critical as a preventive measure. There are many steps and activities that every individual can practice. It ranges from outdoor activities to indoor activities, from strenuous to simple ones and from expensive to the cheapest ones. In the questionnaires, there are six statements provided to trace any possible activities that the respondents had ever practiced relieving stress. From the findings, it showed that sleeping is among the most popular activity to reduce stress. It is not because of its simplicity and out of cost but sleeping may also promote muscle relaxation which brings physiological abnormalities (blood pressure, heart rate, respiratory rate *etc*.) towards normal state.

When they are asked about the practice of good breathing technique, majority of them responded of doing it less frequently. This result could be due to either some of them did not know the right steps in deep breathing technique to obtain a good consequence or they had no specific time to practice it. The deep breathing is a part of good stress management strategy that requires the use of cognitive and behavioral skills to lower down the physiological stress levels. [6] As respiratory system functions effectively, the demand of oxygen of each body organ including brain can be achieved. Thus, the physiological state of the body is maintained and the release of hormones responsible in triggering stressful condition is reduced. Besides, activities like visiting peaceful places like beaches and waterfalls could help in improving health status as individuals may inhale air with less content of hazardous chemicals like sulphur dioxide and carbon monoxide if it is to be compared in crowded cities. From the results, it is found that most of the respondents prefer to do such activities if they get the chance.

Some of the respondents would prefer to involve in outdoor activities like jogging and playing football or other sports to get rid of distressed conditions. When a person joins a group of people playing football together for example, they tend to generate a satisfaction for helping each other.

Other than becoming healthier, the interaction and communication between the players could help the body to respond effectively and avoid any negative symptoms of stress like weakness, less thoughtful and less considerate. In addition, the exercise may improve body systems like an improvement of blood circulation and a reduction in blood cholesterol level. On the other hand, it is found that a portion of the respondents would prefer to let them eating to overcome stress. This practice is however not good as excessive eating may lead to obesity and will increase the blood sugar level. In a long term, the individual may suffer from chronic diseases like diabetes mellitus and hypertension.

Fat percentage, BMI and waist circumference also showed similar pattern as those having PSS score more than mean indicates higher number of students categorized as above normal (overweight). Indeed, overweight condition may result in low self-esteem for them to face many people and this becomes one of contributing factors that lead people to stressful conditions.

CONCLUSION
As a conclusion, the pharmacy students faced many difficulties and burdens from day to day, however, they managed to overcome it through positive behaviors and stress management activities. The challenging life as a pharmacy student did not make them lacking their self-esteem and personal motivation but instead to be more proactive and courageous in facing many obstacles.

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